Unit 2 Lesson 4: Equations and Their Solutions

1 What is a Solution? (Warm up)

Student Task Statement

A granola bite contains 27 calories. Most of the calories come from c grams of carbohydrates. The rest come from other ingredients. One gram of carbohydrate contains 4 calories.

The equation $4c + 5 = 27$ represents the relationship between these quantities.

1. What could the 5 represent in this situation?

2. Priya said that neither 8 nor 3 could be the solution to the equation. Explain why she is correct.

3. Find the solution to the equation.

2 Weekend Earnings

Student Task Statement

Jada has time on the weekends to earn some money. A local bookstore is looking for someone to help sort books and will pay $12.20 an hour. To get to and from the bookstore on a work day, however, Jada would have to spend $7.15 on bus fare.

1. Write an equation that represents Jada's take-home earnings in dollars, E, if she works at the bookstore for h hours in one day.

2. One day, Jada takes home $90.45 after working h hours and after paying the bus fare. Write an equation to represent this situation.

3. Is 4 a solution to the last equation you wrote? What about 7?
    - If so, be prepared to explain how you know one or both of them are solutions.

    - If not, be prepared to explain why they are not solutions. Then, find the solution.

4. In this situation, what does the solution to the equation tell us?

3 Calories from Protein and Fat

Student Task Statement

One gram of protein contains 4 calories. One gram of fat contains 9 calories. A snack has 60 calories from p grams of protein and f grams of fat.

The equation $4p + 9f = 60$ represents the relationship between these quantities.

1. Determine if each pair of values could be the number of grams of protein and fat in the snack. Be prepared to explain your reasoning.

   a. 5 grams of protein and 2 grams of fat

   b. 10.5 grams of protein and 2 grams of fat

   c. 8 grams of protein and 4 grams of fat

2. If there are 6 grams of fat in the snack, how many grams of protein are there? Show your reasoning.

3. In this situation, what does a solution to the equation $4p + 9f = 60$ tell us? Give an example of a solution.